

## ABSTRACT

There is provided a new signal processing device that uses functions appropriate to signal properties to acquire high-quality signals. The signal processing device includes a sampling circuit 2 that samples an input signal and outputs a discrete signal, multiple function generators 3 that generate multiple sampling functions with parameters  $m$  different from each other, plural inner product operating units 4 for each of the parameters  $m$  that take an inner product between the input signal and each of plural sampling functions and output an inner product operating value, and a judging unit 8 that determines parameter  $m$  providing a minimum error out of multiple errors composed of differences between the sampling value and inner product operating values output from the multiple inner product operating units and outputs the parameter  $m$  signal. The signal processing device outputs a discrete signal composed of a string of the sampling values and the parameter  $m$  signal.